Regional Nitrogen Oxides (NOx) Emission Reductions
#00-137(APCB)

Overview

On October 27, 1998, the U.S. EPA promulgated final federal rules requiring 22 states and the District of Columbia to submit state implementation plan (SIP) revisions to reduce the regional transport of ozone. The federal rule focused on reducing NOx emissions in the affected states. In the federal rule, the U.S. EPA established a NOx emission "budget" for each of the affected states and the District of Columbia. The "budget" represents a reduction from emissions in the year 2007 that the U.S. EPA believes will reduce the transport of NOx emissions and will assist downwind areas in meeting ozone air quality standards. The states must demonstrate compliance with the "budget" by implementing control measures to reduce NOx emissions beginning May 31, 2004.

While the rule does not mandate which sources will have to reduce emissions, the rule did provide options that would result in a 65% reduction of NOx emissions from utility boilers and a 60% reduction from large industrial (non-utility) boilers and turbines. The U.S. EPA also discusses a 30% reduction from cement kilns, but does not require specific controls.

IDEM has developed draft rule language to implement this federal mandate. The NOx reductions that will be achieved by this rule will result in significant air quality improvements throughout the state of Indiana, and will be especially important in those areas of the state where ozone levels exceed or regularly approach state and federal air quality health standards.

The draft rule generally follows the outline of the federal rule and contains the same key elements, which are summarized below. Because IDEM recommends that Indiana participate in the regional NOx trading program, which will be administered by U.S. EPA, much of the state rule will incorporate federal language with little or no change. In several areas, the state has more flexibility to adapt the rule to its particular needs. IDEM has worked extensively with the public on those issues and anticipates further discussion prior to final adoption.

Elements of the Draft Rule

The major elements of the rule are listed here and are explained in more detail in the following paragraphs.

- A 2007 ozone season "budget" (Indiana's baseline ozone budget is 340,654 tons of NOx and its budget is 234,625 tons of NOx, a 31% decrease).
- NOx allowance allocation methodology.
- A NOx emissions trading program that would begin in 2004 and be administered by U.S. EPA.
- A compliance supplement pool of NOx allocations for use in 2004 and 2005 by companies needing extra time for compliance with control requirements and for those making early reductions.
- Monitoring and reporting requirements under the Acid Rain program at 40 CFR Part 75 apply to sources covered under the NOx emissions trading program.
- Control requirements for cement kilns that require either the use of specified technology or an emissions reduction of 30%.

Description of Major Elements

Indiana's 2007 Budget

The final federal rule included a "budget" that each state must demonstrate compliance with by 2007. The budget in the final rule was based on the following:

- An emission rate of 0.15 lb NOx/mmBtu for electric generating units
- A 60% reduction for large industrial boilers (> 250 mmBtu/hour)
- A 30% reduction in NOx emissions from cement kilns

The federal rule included a 2007 Indiana baseline of 340,654 tons per ozone season with a 234,625 tons per ozone season budget that results in a 31%

NOx emissions reduction. The baseline represents the emissions that would occur without the reductions called for in the federal rule.

The baseline and the budget represents projected NOx emissions from electric generating units, non-electric generating units, other stationary sources, area sources, and mobile sources. However, U.S. EPA did not assume there would be reductions from area or mobile sources beyond those already required by existing or planning federal and state programs. U.S. EPA assumed that the emissions reductions would come primarily from the electric generating units (EGUs) and non-electric generating units (non-EGUs). However, states are free to regulate any source of NOx emissions so long as they meet their budget. After reviewing the inventory and available control measures, IDEM concluded that EGUs, non-EGUs and cement kilns were appropriate to control.

NOx Allowance Allocation

Indiana must allocate NOx allowances on a per ton basis to the EGUs and non-EGUs for them to operate. NOx allowances are capped at 45,952 per ozone season for EGUs and 11,117 per ozone season for non-EGUs, both a subset of the Indiana NOx budget. The draft rule allocates allowances to EGUs based on the .15 lb./mmBTU emission rate or the allowable emission rate, whichever is more stringent. It allocates allowances to non-EGUs based upon the .17 lb./mmBTU emission rate or the baseline emission rate from 1995-1999 (or the allowable emission rate for sources not operating in those years), whichever is more stringent. It also sets aside 5% of the EGU budget and 1% of the non-EGU budget for new sources and 2% of the total budget for energy efficiency and renewable energy projects. The energy efficiency/renewable energy set aside comes from flexibility in the budget, and it is IDEM's intent that this set aside not require additional controls from NOx sources beyond what the federal rule anticipates. The draft rule allocates allowances to existing units for a three year period, three years in advance. According to information provided to IDEM, all EGUs in Indiana will have to put controls on some of their units because NOx allowances will be insufficient to allow them to operate without adding controls.

NOx Emissions Trading Program

The draft rule includes U.S. EPA's NOx trading program, which allows sources to trade allowances with sources in other states subject to the NOx SIP Call. U.S. EPA will administer the program. Sources must "true up" at the end of each ozone season, and have enough allowances to account for their NOx emissions or face penalties.

The trading program also allows "banking," creating and retaining emission reduction credits for future use by the source. However, to ensure emission reductions are achieved, the use of banked emissions in 2005 and thereafter are subject to "flow control." Flow control caps the amount of banked credits sources may use to prevent excessive future emissions.

NOx sources that are not regulated by the rule can "opt-in" to the trading program so long as they have emissions vented to a stack and comply with the monitoring and reporting sections of the rule.

Compliance Supplement Pool

The draft rule includes a compliance supplement pool of 19,915 NOx allowances. U.S. EPA established the number of allowances based on projections of the amount Indiana would need. Sources may use the compliance supplement pool to extend the compliance date, but only in 2004 and 2005. Sources who reduce emissions at some units before 2004 may receive "early reduction credits" from the compliance supplement pool to use for other units that will not meet the 2004 compliance date. Sources that demonstrate need also may receive allowances from the compliance supplement pool. "Need" exists when an EGU cannot meet the 2004 compliance date without creating an undue risk to the electricity supply or when a non-EGU would face a comparable risk. Sources may apply for up to 50% of the compliance supplement pool in 2004 and the remainder in 2005.

Compliance Monitoring

The draft rule requires that sources who participate in the trading program comply with the monitoring and reporting requirements of the Acid Rain Program at 40 CFR Part 75. This provision requires, for most sources, the use of continuous emission monitors.

Cement Kiln Requirements

These sources do not participate in the trading program, but are required to use specific control technology (mid-kiln firing or low NOx burners) or alternative control techniques to reduce emissions by 30%. Cement kilns also must test annually or monitor emissions and report them annually. Cement kilns may opt-in to the NOx trading

program if they meet the opt-in requirements.

Potential Cost

IDEM has conducted a fiscal analysis and has calculated the average cost effectiveness of the draft rule as follows:

- $2,291 to $2,445 per ton of NOx reduced from utilities;
- $1,321 to $1,940 per ton of NOx reduced from non-utility boilers;
- $760 to $1228 per ton of NOx reduced from cement kilns.

These projected costs are in line with U.S. EPA's estimate of $2000 per ton of NOx reduced. The State Utility Forecasting Group at Purdue University projects the average increase in electricity rates to be 6-7% or $.0033 per kw/hr.

There are numerous other issues that have been discussed with interested parties during this rulemaking. A discussion of those issues can be found in the background sections of the Response to Comments from the first and second comment periods, accessible at www.state.in.us/idem/oam/standard/Sip/index.html.

Outreach

IDEM has held public meetings in Indianapolis, Ft. Wayne, South Bend, Jeffersonville and Evansville to review rule language, discuss regulatory options, and receive comment on draft rule language. IDEM has held monthly meetings in Indianapolis with a NOx workgroup comprised of interested parties, and will continue to do so throughout this process.

IDEM Contact

Additional information regarding this rulemaking action can be obtained from Roger Letterman, Rule Development Section, Office of Air Management, (317) 232-8342 or call (800) 451-6027, dial 0 and ask for Roger Letterman or extension 2-8342 (in Indiana).